

REMARKS

The Office Action mailed on March 7, 2003, has been received and reviewed.

Claims 1-20 are currently pending in the above-referenced application. Claims 2 and 5-10 have been withdrawn from consideration as being drawn to a non-elected invention. Claims 1, 3, 4, and 11-20 stand rejected.

Reconsideration of the above-referenced application is respectfully requested.

Supplement Information Disclosure Statements

Please note that Supplemental Information Disclosure Statements were filed in the above-referenced application on November 17, 2002, and March 17, 2003, but that initialed copies of the Forms PTO-1449 that accompanied these Supplemental Information Disclosure Statements have not yet been returned to the undersigned attorney. It is respectfully requested that the information cited in the Supplemental Information Disclosure Statements be considered and made of record in the above-referenced application and that initialed copies of the accompanying Forms PTO-1449 evidencing such consideration be returned to the undersigned attorney.

Objections to the Drawings and Specification

The drawings have been objected to under 37 C.F.R. § 1.83(a) for failing to show every feature specified in the claim. In particular, the drawings have been objected to for not clearly showing "at least one conductively doped region continuous with a surface of [a] semiconductor substrate . . .," as recited in claim 4.

The Specification has also been objected to for lacking a description of the "at least one conductively doped region . . ." of claim 4.

With respect to the objection to the drawings, the Office indicated that while this feature may be shown in FIGs. 12-16, that fact is not clear since no reference characters have been included to identify the feature that may be a conductively doped region. The Office was correct in its assumption.

To address the objection to the specification, paragraph [0052] of the specification has been amended to better identify the conductively doped region and the semiconductor substrate in FIG. 12. The drawings have also been amended to provide reference characters that clearly identify the conductively doped region and the semiconductor substrate.

In view of the Office's indication at page 3 of the outstanding Office Action that, by virtue of the recitation in claim 4, the as-filed specification provides basis for "at least one conductively doped region continuous with a surface of [a] semiconductor substrate . . .," it is respectfully submitted that the amendments to the specification and drawings do not introduce new matter.

Further, it is respectfully submitted that the amendments to the specification and drawings overcome both the objection to the drawings and the objection to the specification.

Objections to the Claims

Claims 12, 13, and 14 stand objected to for reciting terminology which the Office asserts is inconsistent.

In particular, it has been asserted that the terms "height" and "depth" are used inconsistently in these claims, as are the terms "container" and "recess."

With respect to use of the terms "height" and "depth," claim 13 has been amended to replace the recitation of "height" with "depth," the corresponding term which is used in claim 14.

As for use of the terms "container" and "recess," it is respectfully submitted that the form of each of claims 12-14, which employ the term "container" rather than the term "recess" of claim 1, is proper, as each of claims 12-14 depends from claim 11, which recites that the recess-including substrate of claim 1 is a container-including stacked capacitor structure. Thus, the term "container" is a more specific variation on the term "recess."

In any event, claim 11 has been amended to provide greater clarity as to the relation between the "recess" of claim 1 and the "container" of the stacked capacitor structure recited in claim 11.

In view of the foregoing, it is respectfully requested that the objections to the claims be withdrawn.

Rejections Under 35 U.S.C. § 112, First Paragraph

Claims 13, 14, and 20 stand rejected under 35 U.S.C. § 112, first paragraph. Specifically, it has been asserted that the as-filed specification does not reasonably convey to one skilled in the relevant art “how to make a material layer substantially filling a container . . . , having at the same time a thickness that is less than the depth, or half the depth, of the container, and also a substantially planar surface free of abrasive planarization-induced defects.” Office Action, page 4.

It is respectfully submitted that paragraphs [0039] to [0041] of the as-filed specification reasonably convey to one of ordinary skill in the art how such a structure could be made. As for the recitation that the resulting structure is “substantially planar” and “free of abrasive planarization-induced defects,” it is respectfully submitted that paragraph [0042] of the as-filed specification provides one of ordinary skill in the art with a reasonable understanding of how the resulting, substantially planar structure may be further processed without abrading the exposed surface of the same.

For these reasons, it is respectfully submitted that claims 13, 14, and 20 comply with the requirements of 35 U.S.C. § 112, first paragraph.

Rejections Under 35 U.S.C. § 112, Second Paragraph

Claim 4 stands rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. In particular, claim 4 has been rejected for reciting “laterally,”

This term has been removed by way of the amendment to claim 4 that is presented herein. It is respectfully submitted that claim 4 is, therefore, in condition for allowance under 35 U.S.C. § 112, second paragraph. It is also respectfully submitted that by removing the term “laterally” from claim 4, the scope thereof has been broadened.

Rejections Under 35 U.S.C. § 102(e)

Claims 1, 3, 11-13, and 15-20 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent 6,358,793 to Yates et al. (hereinafter “Yates”).

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single reference which qualifies as prior art under 35 U.S.C. § 102. *Verdegaal Brothers v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Furthermore, the identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). Additionally, the elements must be arranged as required by the claim, but identity of the terminology is not required. *In re Bond*, 15 USPQ2d 1566 (Fed. Cir. 1990).

Yates describes processes for forming localized masks over semiconductor device structures, such as capacitor structures that include containers. Yates also describes that such processes may be effected without the use of abrasive processes such as chemical-mechanical planarization (CMP). In those process, a layer of photoresist is applied (e.g., by conventional spin-on processes) to a substrate, then selectively exposing the photoresist to form a photomask, or mask, therefrom.

Yates is, however, silent as to whether or not the resulting mask has a surface which is “substantially planar.” In fact, the method disclosed in Yates is referred to as “localized masking of . . . container holes . . .” Col. 3, lines 49-51. The only portions of the photoresist that become polymerized during the disclosed process include those located “above the sidewalls of the hole[s]” and that within the holes, which is underexposed.” See, e.g., col. 3, lines 61-65. The remainder of the photoresist is then removed. See, e.g., *id.*

Independent claim 1 recites a semiconductor device structure with a substantially planar surface. The semiconductor device structure of independent claim 1 includes, among other things, a material layer disposed over a substrate and substantially filling at least one recess formed in the substrate. The material layer has a substantially planar surface.

As Yates neither expressly nor inherently describes that the mask layer which is formed by the process disclosed therein may have a substantially planar surface, or that the photoresist layer from which the mask is formed may have a substantially planar surface, it is respectfully

submitted that Yates does not anticipate each and every element of independent claim 1.

Therefore, under 35 U.S.C. § 102(e), independent claim 1 is allowable over Yates.

Claims 3 and 11-13 are each allowable, among other reasons, as depending either directly or indirectly from claim 1, which is allowable.

Claim 13 is additionally allowable since Yates lacks any express or inherently description that the thickness of the photoresist disposed over the capacitor structure thereof is less than the heights of the containers of the capacitor structure.

Independent claim 15 is also directed to a semiconductor device structure with a substantially planar surface. The semiconductor device structure of independent claim 15 includes a substrate with at least one recess formed therein, as well as a material layer disposed at least partially over the substrate. The material layer at least partially fills the at least one recess and includes a substantially planar surface.

Again, Yates does not expressly or inherently describe that either the photoresist layer or photomask thereof has a substantially planar surface. Therefore, Yates does not anticipate each and every element of independent claim 15, as is required to maintain a rejection under 35 U.S.C. § 102(e).

Each of claims 16-20 is allowable, among other reasons, as depending either directly or indirectly from claim 15, which is allowable.

Claim 20 is further allowable since Yates neither expressly nor inherently describes a material layer (*i.e.*, either the photresist layer or the resulting mask layer there) that has a thickness which is less than the depths of the containers thereof.

In view of the foregoing, it is respectfully requested that the 35 U.S.C. § 102(e) rejections of claims 1, 3, 11-13, and 15-20 be withdrawn.

35 U.S.C. § 103(a) Obviousness Rejections

Claim 4 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Yates, in view of U.S. Patent 6,372,151 to Ukita et al.

Claim 14 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Yates.

It is respectfully submitted that both of these 35 U.S.C. § 103(a) rejections are improper as relying upon Yates. In particular, 35 U.S.C. § 103(c) and M.P.E.P. § 706.01(l)(1) provide that, in an application that was filed on or after November 29, 1999, a reference which qualifies as prior art under 35 U.S.C. § 102(e), (f), or (g) and which is owned by the assignee of a patent application at issue may not be relied upon in a claim rejection under 35 U.S.C. § 103(a).

The above-referenced application has an effective filing date of August 21, 2001, and a priority date of April 4, 2000, both of which precede the March 19, 2002, issue date of Yates, but are later than the February 26, 1999, filing date thereof. In this regard, the Office has already acknowledged that Yates qualifies as prior art under 35 U.S.C. § 102(e).

Moreover, both Yates and the above-referenced application have been assigned to Micron Technology, Inc.

Therefore, it is respectfully submitted that the rejections of claims 4 and 14 are improper. Withdrawal of these rejections is, therefore, respectfully requested.

Election of Species Requirement

As each of claims 1, 3, 4, and 15-20 remains generic to all of the species of invention that have been identified by the Office, it is respectfully requested that claims 2 and 5-10 be considered and allowed.

CONCLUSION

It is respectfully submitted that each of claims 1-20 is allowable. An early notice of the allowability of each of these claims, and an indication that the above-referenced application has been passed for issuance, are respectfully solicited. If any issues preventing allowance of the above-referenced application remain which might be resolved by way of a telephone conference, the Office is kindly invited to contact the undersigned attorney.

Respectfully submitted,



Brick G. Power
Registration No. 38,581
Attorney for Applicants
TRASKBRITT, PC
P.O. Box 2550
Salt Lake City, Utah 84110-2550
Telephone: 801-532-1922

Date: June 9, 2003
BGP/dlm:djp

Document in ProLaw